Radiation Polymerization of Isoprene. I.

S/190/60/002/01/04/021
B004/B061

82076 82076

gamma rays of Co^{60} whose yield is directly proportional to the radiation dose, with small fluctuations of the radiation intensity. The microstructure of the polymer in the temperature range 40 - 20°C is independent of the dose and intensity of radiation, and of the presence of a sensitizer (5 mole% CCl_4). The average molecular weight of the polymer rises when the radiation intensity is decreased. The authors thank G. S. Denisov for advice and help in taking the infrared spectra. There are 1 table and 4 references: 4 US

ASSOCIATION: Leningradskiy gosudarstvennyy universitet (Leningrad State University)

SUBMITTED. July 7, 1959

Card 2/2

83466

S/146/60/003/004/006/010
B004/B056

13,2960

AUTHORS: Yevdokimov, V. D., Radchik, A. S.

TITLE: An Apparatus for the Investigation of Friction Processes by the Method of "Thin Plates"

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Priborostroyeniye, 1960, Vol. 3, No. 4, pp. 48-52

TEXT: Friction processes act only upon a thin surface layer of the material. Therefore, the authors investigated such processes by means of lamellas over which a heavy slider was pushed. Fig. 1 shows the sag of a unilaterally clamped copper lamella as a function of the number of slider passages (rate: 0.72 m/min; load: 75 kg/mm^2). The initial deformation again decreases during the following passages. The resulting curve characterizes the conditions under which friction occurs. The authors constructed a portable measuring apparatus (Fig. 2), the function of which is described. The clamped lamella (0.3-0.5 × 5 × 100 mm) is pulled through underneath a load, after which it is lifted in a perpendicular direction, and the amount of sag is recorded by breaking a low-voltage contact at a height

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An Apparatus for the Investigation of Friction Processes by the Method of "Thin Plates"

83466
S/146/60/003/004/006/010
B004/B056

corresponding to the sag. By means of a multiplicator it is possible to record the diagram on different scales. An organic glass rim allows to fill in lubricants. The apparatus makes it possible to investigate the action of oils and various admixtures. By this method it is possible to investigate, on a model, the surface layer which has been changed by friction processes. These changes may be investigated on the samples, so that the phenomena occurring as a result of friction, cutting, or drawing may be studied. The high sensitivity of method and apparatus make it possible to test finished products in the laboratory as well as in operation. This paper was recommended by the kafedra detaley mashin (Chair of Machine Elements). There are 2 figures and 2 Soviet references.

ASSOCIATION: Odesskiy politekhnicheskiy institut (Odessa Polytechnic Institute)

SUBMITTED: February 20, 1960

Card 2/2

YEVDOKIMOV, V.D.

Peening rock salt crystals. Fiz.met.i metalloved. 10 no.1: 131-134 Jl '60. (MIRA 13:8)

1. Odesskiy politekhnicheskiy institut.
(Sodium chloride) (Dislocations in crystals)

S/020/60/134/003/009/020
B019/B060

AUTHORS: Radchik, A. S., Yevdokimov, V. D.

TITLE: The Bauschinger Effect in Sliding Friction

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 134, No. 3, pp. 571 - 573

TEXT: If a sample is first stretched beyond its yield point, then heavily pressed, and again stretched, the limit of elasticity is lowered, and the material is weakened instead of toughened. This is defined as the Bauschinger effect. The authors of the present paper studied the effect of sliding direction on the character of the elastic-plastic deformations in the surface layer. The authors applied a method which they had already described in Ref. 4, by which the friction of a thin sheet (Cu) on a solid base (steel) was measured. The sheet dimensions were 0.3·5·100 mm, and the sliding rate was 0.72 m/sec. Results showed that the surface deformation caused by friction on one side gives rise to a hardening of the surface. The contrary happens with reversive sliding. In the authors' opinion, the hardening of the surface layer as a result of

The Bauschinger Effect in Sliding Friction S/020/60/134/003/009/020
B019/B060

plastic deformation through friction is dependent on the sliding direction. The surface hardening estimated after the microhardness is higher with unidirectional than with reversive sliding. The authors correlate this fact with the Bauschinger effect. K. V. Savitskiy is mentioned. There are 4 figures and 5 Soviet references.

PRESENTED: April 27, 1960, by P. A. Rebinder, Academician

SUBMITTED: April 25, 1960

Card 2/2

S/020/60/135/003/018/039
B019/B077

AUTHOR: Yevdokimov, V. D.

TITLE: On the Wear of Friction Surfaces of Different Sizes

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 135, No. 3, pp. 573-576

TEXT: Tests about wear of friction surfaces showed that the surface with a larger area will experience the greater wear even if both have the same surface characteristic. This phenomenon is explained by stating that the larger surface shows a higher number of starting defects than the smaller surface if the number of defects per unit area is equal. The author used a model to test his theory. For the friction surfaces he used plaster discs where steel balls were imbedded. These steel balls represented "weak spots" in the plaster discs. It is mentioned briefly that the above theory for the larger wear of bigger surfaces does not hold. Tests on rock salt single crystals showed that the increase of the number of starting defects on larger friction surfaces is not the dominating factor for the wear of both surfaces. The author thinks that the main cause of the

Card 1/2

On the Wear of Friction Surfaces of Different Sizes

S/020/60/135/003/018/039
B019/B077

different wear of surfaces with different areas can be found in the dynamics of friction. After extensive tests the author is of the opinion that the smaller friction surface experiences more cold hardening than the larger surface of the same material if the rate of friction is small and the temperature is low; if the rate of friction increases the temperature will influence the wear of both surfaces. An inversion of the wear ratio can occur if the material is similar and the size of the friction surfaces is not equal. This inversion depends on the physico-mechanical sizes and on the cooling conditions during the experiment, too. It was found that the wear of friction surfaces is determined by many factors whose influence depends on various conditions. There are 3 figures, 2 tables, and 22 Soviet references.

ASSOCIATION: Odesskiy politekhnicheskiy institut (Odessa Polytechnic Institute)

PRESENTED: June 9, 1960, by P. A. Rebinder, Academician

SUBMITTED: June 8, 1960

Card 2/2

YEVDOKIMOV, V. D., Cand. Tech. Sci. (diss) "Investigation of Laws of Deformation of Surface Layers Under Sliding Friction," L'vov, 1961, 15 pp. (L'vov Polytech. Inst.) 200 copies (KL Supp 12-61, 266).

YEVDOKIMOV, V.D. (Odessa)

Wear of nonequidimensional friction surfaces. Izv.AN SSSR. Otd.tekh.nauk.Mekh. i mashinostr. no.4:147-153 Jl-Ag '61. (MIRA 14:8)

(Mechanical wear)

YEVDOKIMOV, V.D.

Apparatus for testing the hardness of pressed tablets. Med. prom. 15 no.1:52-54 Ja '61. (MIRA 14:1)

1. Odesskiy politekhnicheskiy institut.
(TABLETS(MEDICINE))
(DRUG INDUSTRY--EQUIPMENT AND SUPPLIES)

YEVDOKIMOV, V.D.

Detachable ring mandrel for fastening samples to the friction machine.
Zav.lab. 27 no.3:347-348 '61. (MIRA 14:3)

1. Odesskiy politekhnicheskiy institut.
(Testing machines) (Friction)

88566

S/020/61/136/001/013/057
B019/B056

18.7000

AUTHOR: Yevdokimov, V. D.

TITLE: Sliding Direction and Cold Hardening of a Surface

PERIODICAL: Doklady Akademii nauk SSSR, 1961, Vol. 136, No. 1, pp. 74-76

TEXT: The author investigated the effect of sliding directed to one side and of the reversible sliding produced upon the distribution of cold hardening over the contact surface and on its boundaries. A steel ring rotated in the experimental arrangement at a rate of 0.2 m/min. The microhardness in the sliding zone and on its boundaries on an Al specimen for the two kinds of sliding are shown in Fig. 1. As may be seen from the diagram 1a, in the case of one-sided sliding, no particularly strong cold hardening occurs in one half of the contact zone, whereas in the case of reversible sliding a cold hardening exists in the entire contact zone (Fig. 1b). The maximum cold hardening in one-sided sliding is greater than that in the case of reversible sliding. Similar studies were made with a rock-salt crystal. The manner in which the microhardness is distributed over the sliding zone and also on its boundaries is quite analogous to that

Card 1/3

Sliding Direction and Cold Hardening of a Surface

in the case of aluminum. From these results and a study of the concentrations of dislocations, the author concludes that the plastic deformation in the transition zones decreases due to cold hardening, that the sliding direction produces an effect upon cold hardening, and the latter outside the sliding zone indicates a condensation of the material by its sliding in this region. There are 3 figures and 7 references: 6 Soviet and 1 US.

ASSOCIATION: Odesskiy politekhnicheskiy institut (Odessa Polytechnic Institute)

PRESENTED: June 10, 1960, by A. N. Frumkin, Academician

SUBMITTED: June 9, 1960

Legend to Fig. 1: 1) Contact zone. 2) Extension. 3) Compression.

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B019/B056

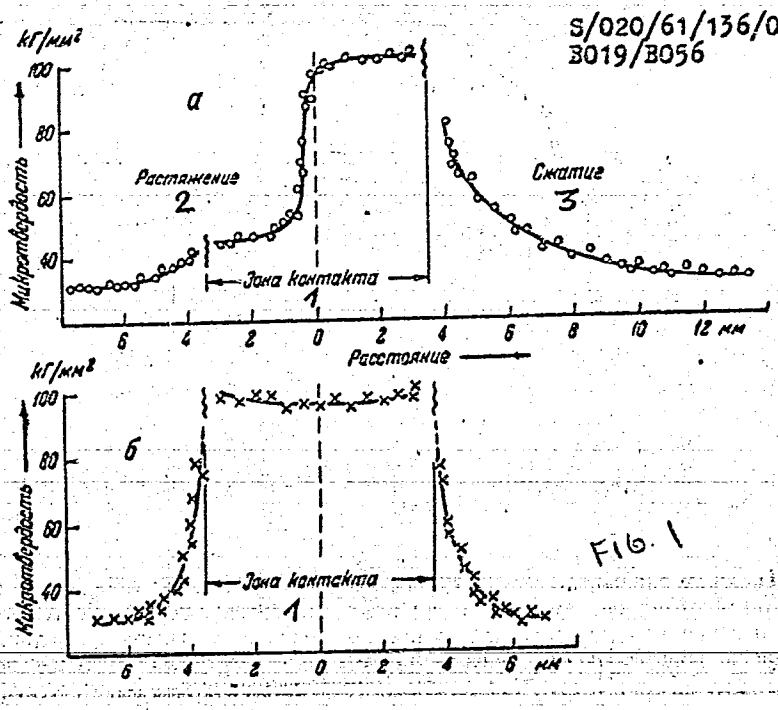

Fig. 1

Card 3/3

32835
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B104/B138

11.9000

AUTHOR: Yevdokimov, V. D.

TITLE: Effect of a surface-active lubricant on frictional deformation with unidirectional and reversing applications of force

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 142, no. 2, 1962, 322-325

TEXT: Results of Soviet papers published between 1934 and 1960 on friction between metals and crystals, related deformations, and the effect of lubricants, especially surface-active ones, are condensed in the present synopsis. The papers show that adsorption processes play an important part in friction and in the mechanical working of metals. The addition of oleic acid to spindle oil considerably reduces the frictional forces between aluminum and steel. The elastic deformation outside the contact faces of the two metals is reduced by this addition both if the frictional force is unidirectional and if it is reversing. These phenomena are explained by theories of P. A. Rebinder, V. I. Likhtman, and S. Ya. Veyler (Deystviye smazok pri obrabotke metallov davleniyem, Izd. AN SSSR, 1960). Work-hardening of rock-salt crystals, aluminum, and steel, both inside and

Card 1/3

outside of the contact face, depends on whether the frictional force is unidirectional or reversing, regardless of the presence of a lubricant (Fig. 1). Less work is required in unidirectional than in reversing operation. Academician P. A. Rebinder is thanked for advice and interest displayed. There are 1 figure, 2 tables, and 15 Soviet references.

ASSOCIATION: Odesskiy politekhnicheskiy institut (Odessa Polytechnic Institute)

PRESENTED: September 7, 1961, by P. A. Rebinder, Academician

SUBMITTED: July 1, 1961

Fig. 1. Distribution of work-hardening inside and outside the contact zone in the case of sliding friction of a steel ring on an aluminum sample.
Legend: (a) sliding one way; (b) sliding with reversing motion; (1) contact zone; (2) microhardness in kg/mm^2. (1) (indicating curves) lubrication with spindle oil. (2) (indicating curves) 0.1% oleic acid in spindle oil.

35661
S/020/62/143/001/015/030
B104/B108

18.8300

AUTHOR: Yevdokimov, V. D.

TITLE: Resistance to wear of the surface layer under alternating shear deformation during sliding friction

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 143, no. 1, 1962, 84-86

TEXT: In previous studies (K. V. Savitskiy, Fiz. met. i metalloved., 4, no. 3 (1957); V. D. Yevdokimov, Sborn. Issledovaniye detaley mashin, Odessa, 1959; Fiz. met. i metalloved., 10, no. 1 (1960); DAN, 136, no. 1 (1960); A. S. Radchik, V. D. Yevdokimov, DAN, 134, no. 3 (1960)) differences were shown to exist in the stresses on surfaces exposed to unilateral or alternating deformation with sliding friction. The extent to which this difference in surface stress affects the resistance to wear is investigated. Alternating sliding friction is shown to increase wear and to reduce the cold hardening of working surfaces. In order to increase the resistance to wear, the direction of slide must coincide with that of shear deformation from previous machining. Slide conditions are also improved in this case. Special attention must be paid to this condition when assembling

Card 1/2

Resistance to wear of the ... S/020/62/143/001/015/0?0
B104/B108

new sliding parts and servicing machines. There are 1 figure, 1 table, and 3 Soviet references.

ASSOCIATION: Odesskiy politekhnicheskiy institut (Odessa Polytechnic Institute)

PRESENTED: July 31, 1961, by P. A. Rebinder, Academician

SUBMITTED: July 7, 1961

Card 2/2

42107

S/179/62/000/005/011/012
E194/E135

12.7310

AUTHOR: Yevdokimov, V.D. (Odessa)

TITLE: Shear strains and resistance to wear of surface layers in friction

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye tekhnicheskikh nauk. Mekhanika i mashinostroyeniye, no.5, 1962, 167-170

TEXT: It is known that alternating frictional shear stress alters the properties of the surface layers, and so a study was made of the influence of the direction of shear strain of the surface layers on the resistance to wear in sliding friction against steel of aluminium, steel, brass and common salt specimens. Tests were made on a friction machine with both reciprocating and repeated uni-directional motion; the number of strokes was the same in both cases. Wear was greater with reciprocating motion and the effect is most marked in more plastic materials. Similar results were obtained in another machine with a shaft rotating in a sleeve; reciprocating motion gave more wear and about 40% less

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work hardening than uni-directional. When steel sleeves were worked by pressure of lubricated rollers in a lathe it made no difference whether subsequent uni-directional wear tests were made in the same direction as the rolling or in the opposite direction, probably because the shear strain was small. However, when working in the lathe was against fixed rollers or balls, a directional effect was observed in subsequent friction tests against steel. With friction in the opposite direction to work hardening, wear was much greater than when it was in the same direction and nearly as great as on an unworked specimen. The wear scars had a rougher surface when the direction of friction was opposite to that of working.
There are 2 figures and 2 tables.

SUBMITTED: February 19, 1962

Card 2/2

YEVDOKIMOV, V.D.

Experimental determination of the deformation of metal surface layer during cutting. Stan.i instr. 33 no.8:32-33 Ag '62. (MIRA 15:8)

(Metal cutting) (Deformations (Mechanics))

B/123/62/000/016/013/013
A004/A101

AUTHOR: Yevdokimov, V. D.

TITLE: Effect of surface-active lubricants on the efficacy of alternating metal punching

PERIODICAL: Referativnyy zhurnal, Mashinostroyeniye, no. 16, 1962, 1, abstract 16V1 ("Nauchn. zap. Odessk. politekhn. in-t", 1961, v. 35, 79 - 82)

TEXT: The effect of surface-active lubricants on the nature of plastic deformation of metal was investigated by unilateral and alternating punching of steel balls (hardened, with ground surface) 7.9 mm in diameter through holes 7.75 mm in diameter in a red-copper cylinder 38 mm in diameter and 17 mm high. The ball surface and hole surface were washed with CCl_4 and rubbed with absorbent cotton prior to the tests. The tests were carried out without lubrication (I), with spindle oil without additives (II) and with the same oil with a 0.5% oleic acid addition (III). The presented P versus n graphs (P - punching stress in kg, n - number of ball passes) show in particular, that on the curves III in unilateral and alternating punching, P magnitudes are considerably less than on curves I and II at corresponding n, and that the reduction of P down to a constant magnitude takes place at a

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S/123/62/000/016/013/013
A004/A101

lesser magnitude of n. The input of work in the case of III for reversive punching is somewhat higher than for unilateral punching, but considerably lower than for reversive punching in cases I and II. There are 4 figures.

P. Kazhdan

[Abstracter's note: Complete translation]

YEVDOKIMOV, V.D., inzh.

Dependence of peening on the direction of sliding friction. Metalloved. i term. obr. met. no.10:2-5 O '62. (MIRA 15:10)

1. Odesskiy politekhnicheskiy institut.
(Metals—Cold working)

YEVDOKIMOV, V.D. (Odessa)

Shift deformations and wear resistance of surface layers subjected to friction. Izv.AN SSSR.Otd.tekh.nauk.Mekh.i mashinostr.no.5:167-170 S-O '62. (MIRA 15:10)

(Surfaces (Technology)) (Friction)

YEVDOKIMOV, V.D.; KOZUBSKIY, I.V.

Three-component dynamometer for measuring cutting forces. Stan.i instr. 35 no.9:31-32 S '64. (MIRA 17:10)

YEVDOKIMOV, V.D., kand. tekhn. nauk; MEZENTSEV, S.A., inzh.; BURDA, I.Kh., inzh.; KOZUBSKIY, I.V., inzh.

Burnishing holes in steel parts. Mashinostroenie no.3:41-42 My-Je '65. (MIRA 18:6)

AUTHOR: Yevdokimov, V. D.

TOPIC TAGS: elastic deformation, work surface, friction contact zone

contact zone as a function of operating regime

strain pickup and the contact zone. A wire pickup measuring 15x6 mm, with a 120

Card 1/4

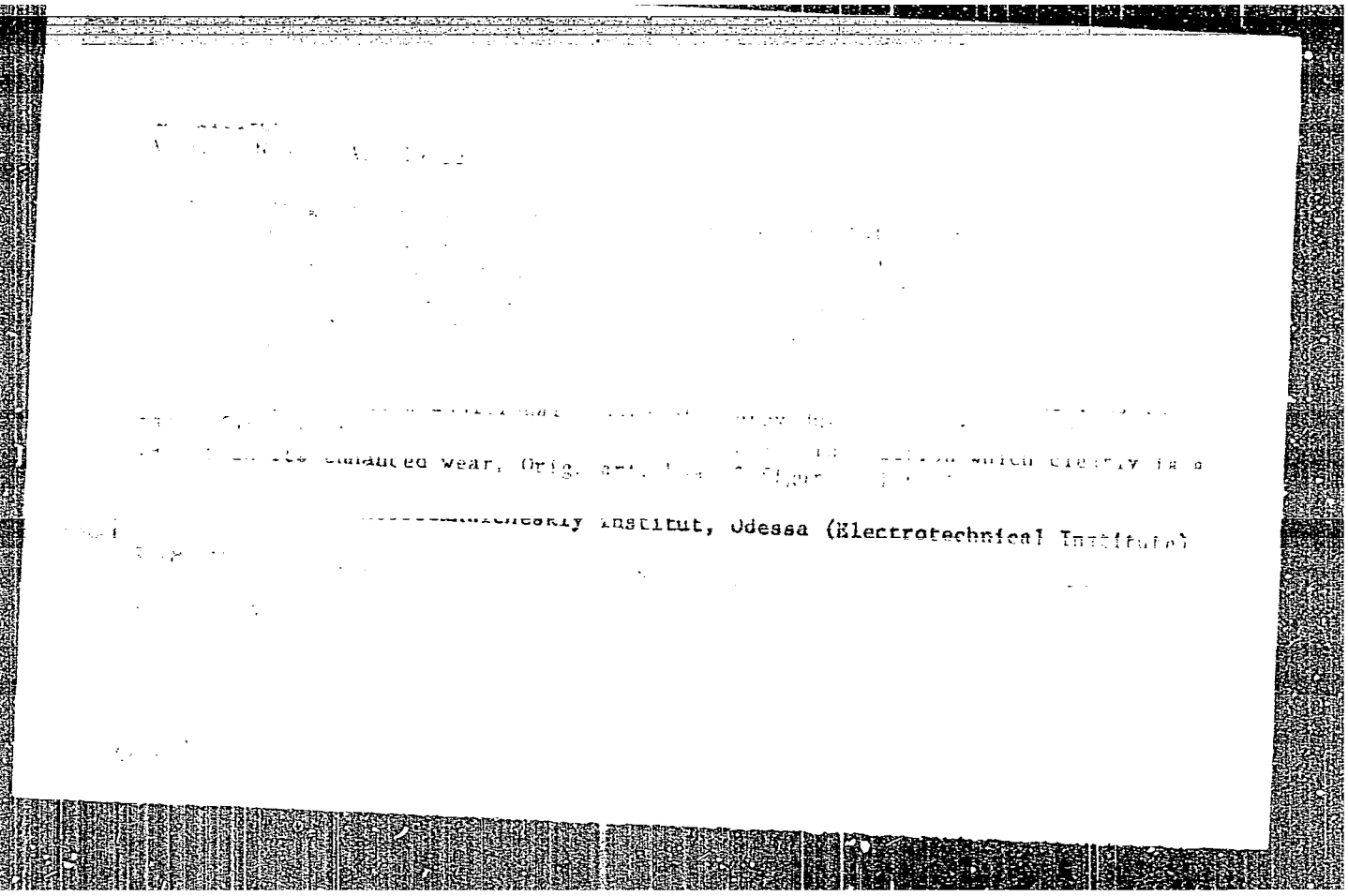
ohm resistance of the constantan-wire mesh, was glued to the cylindrical surface

as possible to the contact zone, contact was accomplished by using two cylindrical surfaces. Cylindrical roller 1 (diameter 9 mm, length 14 mm), rigidly affixed to holder 3, is pressed under a specific load against ring 2. Under a normal load

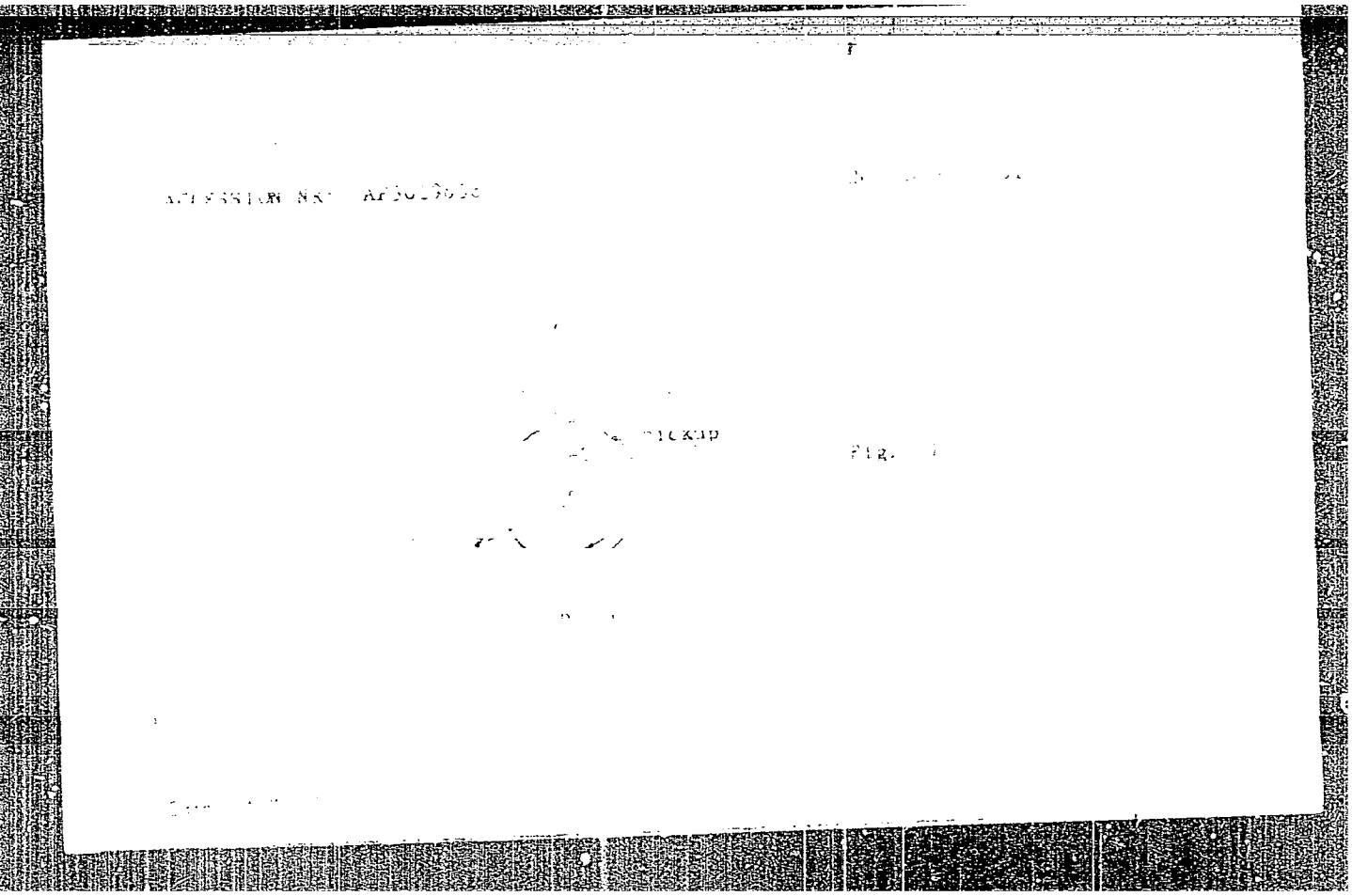
outside the contact zone is determined not only by the presence of lubricants, the

the lower this time is, the greater the rate of lubrication

Card 2/4



...eakly Institut, Odessa (Electrotechnical Institute)



YEVDOKIMOV, V.D., kand. tekhn. nauk

Unequal wear of nonmetallic friction specimens. Izv. vys. ucheb. zav.; mashinostr. no.8:83-86 '65. (MIRA 18:10)

YEVDOKIMOV, V.D.

Directivity effect of deformations in rock salt crystals due to friction. Dokl. AN SSSR 165 no.3:545-547 N '65.
(MIRA 18:11)

1. Odesskiy elektrotekhnicheskiy institut svyazi. Submitted April 2, 1965.

ACC NR: AP6007607 SOURCE CODE: UR/0413/66/000/003/0076/0076

AUTHOR: Yerdokimov, V. D.

ORG: none

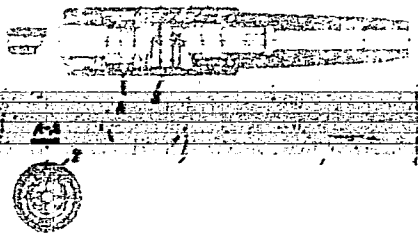
TITLE: Device for measuring torque and axial forces. Class 42, No. 178532

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 3, 1966, 76

ABSTRACT: This Author Certificate presents a device for measuring torque and axial forces, a sensing element for measuring the axial forces, and two inductive transducers for transforming the torque and force values into electrical signals transmitted to the drive

Card 1/2 UDC: 531.781:621.317.712

ACC NR: AP[illegible]



[illegible] - split ring;
[illegible] - [illegible]; [illegible] - shoulder;
4 - elastic inserts;
5 - axial force balls.

spindle shoulder and the force sensors. [illegible] art. has [illegible] figure.

SUB CODE: 09,13/ SUBM DATE: 11Nov63

Card 2/2

ACC NR: AP5028911 (N) SOURCE CODE: UR/0020/65/165/003/0545/0547

AUTHOR: Yevdokimov, V. D.

ORG: Odessa Electrotechnical Institute of Communications (Odesskiy elektrotekhnicheskiy institut svyazi

TITLE: On the effect of strain directivity in friction of rock-salt crystals

SOURCE: AN SSSR. Doklady, v. 165, no. 3, 1965, 545-547

TOPIC TAGS: crystal surface, sodium chloride, strain hardening, friction

ABSTRACT: The purpose of the study was to check on the experimentally observed irregularities of surface hardening produced by unilateral friction. The author investigated to this end the effect of directivity of the strain connected with the plastic deformation in surface layers when NaCl crystals are in friction, and the resultant lattice defects. The tests were based on the fact that volume-deformed rock salt crystals become phosphorescent when exposed to x-rays and can thus produce an image on a photographic plate. The samples were 25 x 20 x 12 mm in size and were tested in a friction machine described by the

Card 1/2 UDC: 539.621

L 30705-66

ACC NR: AP5028911

author earlier (with I. V. Kozubskiy, Mashinostroyeniye (Kiev), No. 4, 34, 1964). The test procedure was also described earlier by the author (Fiz. met. i metalloved. v. 10, No. 1, 131, 1960). The photography procedure is described in detail. The photography results were checked by observation under a microscope. The directivity of the strains is found to manifest itself during friction in different manners to cause an uneven degree of plastic deformation, an increased amount of energy margin in the compression zone, and an increased dislocation density. The sign reversal of the shear deformations during friction gives rise to a redistribution of the dislocation fields. This report was presented by Academician P. A. Rebinder. Orig. art. has: 4 figures.

SUB CODE: 20/ SUBM DATE: 14Mar65/ NR REF SOV: 007

Card 2/2 LS

YEVDOKIMOV, V.F.; LEONOV, E.A.

Serous meningitis in acute pancreatitis. Vrach. delo no.3:135-136 Mr '64. (MIRA 17:4)

YEVDOKIMOV, V.F.

15.9205 2109,1209

S/138/60/000/009/002/012
A051/A029

AUTHORS: Podtubnyy, I.Ya.; Kartsev, V.N.; Aver'yanov, S.B.; Trenke, Yu.V.; Aver'yanova, L.A.; Yevdokimov, V.F.

TITLE: The Vulcanization of Polydimethylsiloxane Rubber Using γ-Radiation

PERIODICAL: Kauchuk i Rezina, 1960, No. 9, pp. 5 - 15

TEXT: Vulcanizates produced by the ionizing radiation method were found to have improved properties, since the formation of transverse bonds at relatively low temperatures can be accomplished without the use of chemical vulcanizing agents (Ref. 1 - 6). The vulcanization process of polydimethylsiloxanes is accomplished according to the free-radical mechanism (Refs. 1,4,7,8,2,5,6,10, 11 - 14). The results are cited of experimental work conducted in order to increase the temperature-stability of polymethylsiloxane (KT (SKT)-based vulcanizates and to improve their physico-mechanical properties by using the radiation method of vulcanization combined with a change in the preparation of the rubber mixture and by introducing new components into the rubber composition. Co^{60} with an activity of 1,450 g -equ. of radium was used as the source of the gamma-emission. The dose was 0.25 - 0.72 Mr/h. It is pointed out that the characteristic feature of radiation vulcaniza-

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tion appears to be the absorption energy by the filler, the possibility of further redistribution of the energy by the polymer and the filler and the formation of a chemical bond between them. Rubbers with satisfactory tensile and elastic properties could be obtained by the radiation vulcanization of SKT in combination with the introduction of various additives into the rubber mix containing У-333 (U-333) powdered silica gel after a lengthy period of thermal aging at 300°C. These rubbers were found to exceed vulcanizates and those obtained earlier by the radiation method in their thermal resistance. By further refining the rubber mixture increases in the thermal resistance could be achieved. Radiation vulcanizates of polymethylsiloxane rubber filled with furnace carbon black could be produced with relatively high physico-mechanical properties and an elevated thermal resistance. The vulcanizates were current-conducting. Radiation vulcanizates of polymethylsiloxane rubber filled with powdered silica gel and furnace carbon blacks are much superior to the peroxide vulcanizates in their temperature stability. At a temperature of 200°C radiation vulcanizates of SKT rubber were obtained with considerably high physico-mechanical properties. The tensile properties of radiation vulcanizates filled with U-333 powdered silica gel could be considerably increased by introducing iron oxides or zirconium oxides into the rubber mix-

Card 2/3

ture, as well as by preliminary refining of the rubber mixtures increasing their homogeneity. They surpass the corresponding peroxide vulcanizates in their thermal resistance in closed systems at an elevated pressure and are characterized by their higher values of elasticity restoration after various periods of thermal aging, by their lower values of residual compression deformation at 150-200°C, by a lower weight loss during thermal aging and a somewhat higher frost-resistance. They do not differ from the peroxide vulcanizates in their dielectric properties, hardness, elasticity and tear-resistance. The authors recommend their method for the production of highly heat-resistant radiation vulcanizates of polymethylsiloxane rubber in the manufacture of articles intended for use under conditions of long-lasting temperature effect of up to 300°C. There are 9 tables, 5 figures and 16 references: 4 Soviet, 11 English, 1 German.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut sinteticheskogo kauchuka im. S.V. Lebedev (All-Union Scientific Research Institute of Synthetic Rubber im. S.V. Lebedev)

Card 3/3

IVANOV, V.S.; SOKOLOVA, M.A.; AVER'YANOV, S.V.; YEVDOKIMOV, V.F.; GURLYAND, I.S.

Radiation polymerization of isoprene. Vysokom.soed. 2 no.1: 35-37 Ja '60. (MIRA 13:5)

1. Leningradskiy gosudarstvennyy universitet.
(Isoprene) (Gamma rays)

KHENOKH, M.A.; KUZICHEVA, Yu.A.; AVER'YANOV, S.V.; YEVDOKIMOV, V.F.

Action of ultrasonic waves and γ-rays of Co^{60} on polyvinyl alcohol solutions. Zhur. VKHO 5 no.1:105-106 '60. (MIRA 14:4)

1. Institut evolyutsionnoy fiziologii imeni Sechenova AN SSSR.
(Vinyl alcohol) (Ultrasonic waves)
(Gamma rays)

S/020/60/135/002/035/036
B016/B052

AUTHORS: Khenokh, M. A., Kuzicheva, Ye. A., and Yevdokimov, V. F.

TITLE: The Action of Gamma Rays of Co^{60} on Dry Carbohydrates

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 135, No. 2, pp. 471 - 474

TEXT: The authors report on their experiments concerning the action of high gamma doses (Co^{60}, activity of ~1440 g-equ. radium) on dry sugars and polysaccharides. Dry and air-dried glucose, fructose, saccharose, raffinose, mannite, and starch were exposed to radiation in a vacuum. The resulting products were examined by the analytical methods described in Ref.1. The action of γ-rays was revealed by the strong smell of the above carbohydrates, and by the fact that they turned increasingly brown as the dose was increased. The analysis of the products revealed that under the action of γ-rays of Co^{60}, dry carbohydrates undergo chemical transformations which are closely related to those of aqueous radiolysis

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(Ref.1): They also undergo oxidative destruction under the formation of H_2CO, dioxyacetone, and organic acids; the glucoside bonds of di-, tri-, and polysaccharides are ruptured. It was found that equal products are formed under the direct and indirect gamma action on saccharose and mannite. The ultraviolet absorption spectra of glucose, fructose, raffinose, and starch solutions exposed to radiation (Figs.1-3) differed from those of aqueous carbohydrate solutions exposed to radiolysis. This indicates that in the latter case the mechanism of chemical transformation differs from that of direct gamma action. The authors' data only partly prove the scheme according to which the reaction of the dissolved substances with the OH radicals yields the same products as formed by direct gamma action (Ref.5). The radiochemical transformation in dilute solutions depends on the reaction of dissolved substances and H atoms, OH and HO_2 radicals. Ionizing radiation, on the other hand, causes an ionization and excitation of molecules which decay under the formation of free radicals. The recombination of free radicals formed in dry sugars (Ref.6) is difficult due to slowed-down diffusion. Long-lived radicals remain in the crystal where they form monosaccharides

The Action of Gamma Rays of Co^{60} on Dry Carbohydrates

S/020/60/135/002/035/036
B016/B052

and other compounds when reacting with water. In solid carbonhydrates exposed to radiation, these radicals form intermediary stages of the radiolytic decay of molecules. However, it is difficult to detect these radicals during aqueous radiolysis, since the addition of the elements of water takes place rapidly. It is hoped that this work will contribute to a better understanding of the chemical destruction of carbonhydrates by ionizing radiation. They thank Professor I. Ya. Poddubnyy who made the experiments possible. V. V. Antuf'yev assisted in this work. There are 3 figures and 6 references: 3 Soviet and 1 US.

ASSOCIATION: Institut tsitologii Akademii nauk SSSR (Institute of Cytology of the Academy of Sciences USSR)

PRESENTED: June 2, 1960, by A. F. Ioffe, Academician

SUBMITTED: May 30, 1960

Card 3/3

S/081/62/000/006/028/117
B171/B101

AUTHORS: Zyabkina, Ye. P., Yevdokimov, V. F.

TITLE: Use of hard electrodes in polarography

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 6, 1962, 120, abstract 6D21 (Tr. Leningr. tekhnol. in-ta im. Lensoveta, no. 55, 1961, 174)

TEXT: It has been established that rotating hard electrodes can be used for amperometric titration of Th by a fluoride, with Fe^{3+} as indicator ion. [Abstracter's note: Complete translation.]

Card 1/1

VOTINOV, M.P.; LAPINSKAYA, Ye.M.; KHENOKH, M.A.; YEVDOKIMOV, V.F.; ANTUF'YEV, V.V.; STAFEYEV, A.V.

Electron paramagnetic resonance spectra of hippuric acid irradiated by gamma rays of Co^{60}. Radiobiologiia 1 no.1:149-150 '61. (MIRA 14:7)

1. Politekhnicheskiy institut im. M.I.Kalinina i Institut tsitologii AN SSSR, Leningrad.

(PARAMAGNETIC RESONANCE AND RELAXATION)
(HIPPURIC ACID)
(GAMMA RAYS—PHYSIOLOGICAL EFFECT)

LAPINSKAYA, Ye.M.; KHENOKH, M.A.; YEVDOKIMOV, V.F.

Radiochemical transformation pf phenylelanine. Radiobiologiia 1 no.5:694-700 '61. (MIRA 14:11)

1. Institut tsitologii AN SSSR, Leningrad.
(ALANINE) (RADIOCHEMISTRY)

5.3930
11.2215

24044
S/020/61/138/003/016/017
B103/B208

AUTHORS: Sokolov, V. N., Poddubnyy, I. Ya., Perekalin, V. V., and Yevdokimov, V. F.

TITLE: Polymerization of nitroethylene under the action of γ-radiation

PERIODICAL: Doklady Akademii nauk SSSR, v. 138, no. 3, 1961, 619-620

TEXT: The authors devised methods for the industrial production of high-molecular nitroethylene under the action of γ-radiation since in this case products are obtained which are as pure as the initial monomers. Other methods with initiator and solvent yielded so far only powdery products contaminated by initiator and solvent. Co^{60} was used as radiation source, the apparatus is described by A. Kh. Breger et al. (Ref. 9: Deystviye ioniziruyushchikh izlucheniy na neorganicheskiye i organicheskiye polimernyye sistemy (Effect of ionizing radiation on inorganic and organic polymer systems), Izd. AN SSSR, 1958). The initial nitroethylene was obtained by dehydration of 1-nitro-ethanol-2 with phthalic anhydride. Fractions with a boiling point of 36°C/100 mm Hg were isolated from the monomer by

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Polymerization of nitroethylene ...

repeated fractionation. Hot nitrogen was bubbled through glass ampuls which were then filled with freshly distilled nitroethylene. The occluded atmospheric oxygen was removed by the usual freezing up and melting. The ampuls sealed in vacuo were irradiated at 20°C, and the monomer was distilled off in vacuo after opening. At the beginning of irradiation (dose $1 \cdot 10^6$ r), a turbidity was observed in the monomer which had hitherto been as clear as water. At a dose of $5 \cdot 10^6$ r a white precipitate results which is identical with the polymer resulting under the action of organic bases. On further irradiation, the pasty monomer-polymer mixture is converted to a transparent, pale-yellow polymer block. This is apparently related to secondary addition reactions of growing polymer chains to the polymer already formed, and is accompanied by an increase of its molecular weight. At doses > 0.3 Mr/hr no block polymer is formed. In this case the polymer remains powdery up to a 100% conversion, and turns light-brown. The formation of the block polymer being a very complicated physico-chemical process depending on many factors, a powder is formed in some cases even with a 100% conversion. The polymerization of partly

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Polymerization of nitroethylene ...

polymerized samples continues also after irradiation is finished. This suggests the formation of rather long-live polymer radicals under the action of γ-radiation (Fig. 2). Also in this case block-polynitroethylene results. The polymerization is inhibited by hydroquinone and oxygen which confirms the radical nature of this process. The polymer is insoluble in common solvents, well soluble in N,N-dimethyl formamide. Its intrinsic viscosity in this solvent is 0.38 which corresponds to a molecular weight of 38,000. Its density is d_{20} 1.535, the decomposition temperature 150°C. No denitrification $(-CH_2-CHNO_2^-)_n$ takes place during irradiation. The crystalline phase is absent (X-ray data by S. G. Strunskiy). An intense narrow halo and a weak broad halo correspond to the parameters of the short-range order 5.15 Å and 3.73 Å. Under the action of γ-radiation nitroethylene may be copolymerized with other unsaturated nitro compounds such as 1,4-dinitro-butadiene-1,3. There are 3 figures and 9 references: 3 Soviet-bloc and 6 non-Soviet-bloc. The two most important references to English-language publications read as follows: Ref. 4: D. Vofsi, A. Katchalsky. J. Polym. Sci., 26, 127 (1957); Ref. 7: G. Buckley,

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24044
S/020/61/138/003/016/017
B103/B208

Polymerization of nitroethylene ...

C. Scaife. Brit. Pat. 595282, 1947; Chem. Abstr., 42, 37775 (1948).

PRESENTED: December 20, 1960, by N. N. Semenov, Academician

SUBMITTED: December 17, 1960

Card 4/5

32317
S/020/61/141/005/010/018
B103/B110

5.4600 (also 1304)

AUTHORS: Yevdokimov, V. F., Poddubnyy, I. Ya., and Kuzin, I. A.

TITLE: Titanium and tin tetrachlorides as acceptors of radicals in the radiolysis of hydrocarbons

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 141, no. 5, 1961, 1097-1100

TEXT: The radiochemical reduction of $TiCl_4$ and $SnCl_4$ dissolved in hydrocarbons by Co^{60} gamma radiation and the possibilities of using this reaction for initiating the polymerization were studied. The following mixtures were irradiated in glass ampullas: (1) $TiCl_4$ - n-octane; (2) $TiCl_4$ - benzene; (3) $SnCl_4$ - n-octane; and (4) $SnCl_4$ - octamethyl cyclotetrasiloxane. The solutions were degassed; then, the ampullas were evacuated and sealed. After removal of the liquid products of radiolysis and drying in vacuo at 120°C the subchloride precipitations were analyzed by potentiometric titration with silver chloride and platinum electrodes. The quantity of the energy absorbed was determined by ferrous sulfate dosimetry. The yield of the reaction was assumed to be 15.6 molecules per

Card 1/5

Titanium and tin tetrachlorides ...

100 ev. The apparatus has been described previously (Ref. 11: A. Kh. Breger, V. A. Belynskiy et al., Sborn. Deystviye ioniziruyushchikh izlucheniy na neorganicheskiye i organicheskiye sistemy (Effect of ionizing radiations on inorganic and organic systems), Izd. AS SSSR, 1958, p. 379). A loose gradually concentrating brown precipitation forms on irradiation of the mixture (1)-(4). Fig. 1 (curve 2) shows the radiochemical yield G of the reduction of $TiCl_4$ in n-octane solutions. In benzene solutions G_{TiCl_4} is smaller by one power of ten, whereas its maximum value reaches 0.75 (in agreement with literature data). The ultimate analysis shows that the precipitations formed are $TiCl_3$ and can be completely dissolved in dry N,N-dimethyl formamide. The brown β-$TiCl_3$ modification produced was used as component of a Ziegler catalyst (β-$TiCl_3$ + (iso-C_4H_9)$_2$AlCl)) and showed normal catalytic activity in the polymerization of diolefins. The epr spectrum of the mixtures (1) irradiated at 77°K belongs presumably to Ti^{3+} and is stable at 77°K. The width of the lines between the two maxima was 22 oersted. The g factor of the signal center is 1.91. The relevant sensitivity was ~$5 \cdot 10^{-12}$ M diphenyl-

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Titanium and tin tetrachlorides ...

picryl hydrazyl. The intensity of the spectrum increases linearly with increasing $TiCl_4$ concentration. At the same time, the existence of the epr spectrum of the hydrogen atom stabilized on the quartz surface was confirmed $SnCl_2$ is precipitated by irradiation of the mixtures (3) and (4). G_{SnCl_4} is shown in Fig. 1 (curve 1). Since it was shown by K. A. Andrianov, S. Ye. Yakushkina (Ref. 13: Vysokomolek. soyed. v. 10, 1508 (1960)), that the polymerization of octamethyl cyclotetrasiloxane is effected by $SnCl_4$ at 120-150°C with simultaneous breaking of the ring, this reaction was performed under the effect of ionizing radiation at room temperature. Simultaneously the polymer formed was chlorinated by reduction of $SnCl_4$ to $SnCl_2$. The Cl content in the polymer reached 3 mole-% with radiation doses of about 30,000,000 r. The molecular weight of the polymer increases with increasing $SnCl_4$ concentration. The CH_4/H_2 ratio in the gases escaping on irradiation of octamethyl cyclotetrasiloxane remains constant in a wide range of doses up to 45,000,000 r. Addition of $SnCl_4$ increases the CH_4/H_2 ratio in this range of doses. Thus, the H atom

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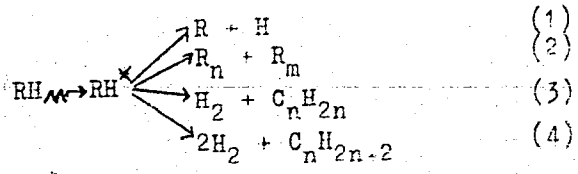
Titanium and tin tetrachlorides .

is more active than the CH_3 radical in $SnCl_4$ reduction effected by irradiation. The following possible types of initial reactions are indicated:



(1)
(2)
(3)
(4)

The free radicals formed according to (1) and (2) may interact with $TiCl_4$ and $SnCl_4$: $TiCl_4 + H \longrightarrow TiCl_3 + HCl$, $TiCl_4 + R^{\cdot} \longrightarrow TiCl_3 + RCl$. Moreover, a redistribution of the energy absorbed is not impossible in the relevant two-component system, if the tetrachloride concentrations are increased. There are 4 figures and 14 references. 10 Soviet and 4 non-Soviet. The three most recent references to English-language publications read as follows: H. A. Schwarz, J. Am. Chem. Soc., 79, 534 (1957); Krehz, H. Dewhurst, J. Chem. Phys., 17, 1337 (1949); C. H. Bamford, A. D. Jenkins, R. Johnston, Proc. Roy. Soc., A 239, 214 (1957).

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Titanium and tin tetrachlorides ...

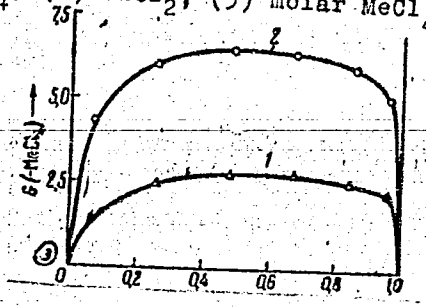
32317
S/020/61/141/005/010/018
B103/B110

ASSOCIATION: Nauchno-issledovatel'skiy institut sinteticheskogo kauchuka im. S. V. Lebedeva (Scientific Research Institute of Synthetic Rubber imeni S. V. Lebedev)

PRESENTED: July 14, 1961, by S. S. Medvedev, Academician

SUBMITTED: July 14, 1961

Fig. 1: Radiochemical yield of the reduction of $SnCl_4$ and $TiCl_4$ dissolved in n-octane.
Legend: (1) $SnCl_4$; (2) $TiCl_2$; (3) molar $MeCl_4$ component.



Card 5/5

43237
S/844/62/000/000/057/129
D204/D307

AUTHORS: Votinov, M. P., Khenokh, M. A., Kuzicheva, Ye.A, Yevdokimov, V. F. and Antuf'yev, V. V.

TITLE: The EPR spectra of γ irradiated solid carbohydrates

SOURCE: Trudy II Vsesoyuznogo soveshchaniya po radiatsionnoy khimii. Ed. by L. S. Polak. Moscow, Izd-vo AN SSSR, 1962, 335-338

TEXT: The EPR spectra of some dry, crystalline, mono-, di-, and trisaccharides and other high-molecular weight carbohydrates were studied in an effort to determine the radiochemical changes taking place. The spectra of (1) glucose, (2) fructose, (3) saccharose, (4) galactose, (5) raffinose, (6) mannite, (7) cellulose, and (8) cellobiose are illustrated, described and discussed. Thus e.g. (1) two types of radicals were found, one of which corresponded to a fission of a C-H bond; (2) evidence was obtained of interaction between an unpaired election and 3 equivalent protons - the radical present was a secondary one; (3) the radicals formed by

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S/844/62/000/000/057/129
D204/D307

The EPR spectra ...

the fission of a 1,2-glucoside bond and by the splitting off of a H from a C; (4) the spectrum became symmetrical on storage in air at room temperature; (5) two types of radicals were present, formed by the fission of 1,2- and 6,1-glucoside bonds and by the splitting off of H's bonded directly to C-atoms; (6) an interaction was evident between an unpaired electron with 3 nonequivalent protons; (7) two types of radicals were detected, one of which was formed by a fission of a 1,4-bond; (8) two radicals were present, one being secondary. No EPR signal was detected from γ irradiated starch. The concentrations of radicals and the EPR spectra remained essentially unchanged over more than 6 months, at room temperature; the radicals disappeared when the carbohydrates were melted. The intensity of the EPR signals increased, slower than linearly, with increasing doses of irradiation. It is concluded that information concerning the radiochemical changes may be obtained by the EPR method. There are 2 figures.

ASSOCIATION: Leningradskiy politekhnicheskiy institut im. M. I. Kalinina (Leningrad Polytechnical Institute im. M.I.

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The EPR spectra ...

S/844/62/000/000/057/129
D204/D307

Kalinin); Institut tsitologii AN SSSR (Institute of Cytology, AS USSR); Institut Vysokomelekulyarnykh soyedineniy AN SSSR (Institute of High Molecular Weight Compounds, AS USSR)

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S/844/62/000/000/070/129
D204/D307

AUTHORS: Lapinskaya, Ya. M., Khenokh, M. A., Votinov, M. P., Yevdokimov, V. F. and Antuf'yev, V. V.

TITLE: The action of γ radiation of Co^{60} on solid hippuric acid

SOURCE: Trudy II Vsesoyuznogo soveshchaniya po radiatsionnoy khimii. Ed. by L. S. Polak. Moscow, Izd-vo AN SSSR, 1962, 403-408

TEXT: The effects of γ radiation on hippuric acid, benzoic acid, and glycine were studied in the presence of air. PhCOOH gave rise to PhCOO• only, and glycine was radiolyzed to NH_3 and CH_2O, the extent of decomposition increasing with increasing dose of irradiation. Hippuric acid itself turned pink on exposure to γ rays, but the color disappeared on recrystallization or on heating to 130°C. The physical properties of hippuric acid remained unchanged after irradiation. The EPR spectrum showed 5 lines which corresponded to a H interacting with the N-nucleus and two other protons. The intensity of the lines rose with increasing dose. On heating the irradia-

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ted acid to 128°C one line of the EPR spectrum was seen to disappear; at 180°C only the central doublet remained, and decomposition set in at 210°C. The γ rays ionize and excite the molecules of the acid, which subsequently break up into stable free radicals. Thus the presence of the aromatic ring gives stability to hippuric acid w.r.t. γ radiation. There are 4 figures.

ASSOCIATION: Institut tsitologii AN SSSR; Leningradskiy politekhnicheskiy institut im. M. I. Kalinina (Institute of Cytology AS USSR; Leningrad Polytechnic Institute im. M. I. Kalinin)

43238
S/844/62/000/000/071/129
D204/D307

AUTHORS: Khenokh, M. A., Kuzicheva, Ye. A. and Yevdokimov, V. F.

TITLE: The action of ionizing radiation on solid carbohydrates

SOURCE: Trudy II Vsesoyuznogo soveshchaniya po radiatsionnoy khimii. Ed. by L. S. Polak. Moscow, Izd-vo AN SSSR, 1962, 409-414

TEXT: The influence of γ oxidation on solid glucose, galactose, fructose, sucrose, lactose, raffinose, mannite and starch was investigated. γ rays ionize and excite the carbohydrate molecules, which split into stable free radicals. The monosaccharides decompose to give HCHO and other compounds, but no new reducing sugars are formed. Sucrose forms fructose, HCHO and dihydroxyacetone but lactose gives the monosaccharide only, with high radiation doses. Hence the 4,1-bond is more stable to γ radiation than the 2,1-bond. In raffinose the γ rays break the 1,2-bond, liberate fructose and form HCHO and a compound containing a chromatic group. Mannite decomposes to give HCHO, dihydroxyacetone, an organic acid and fruc-

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The action of ...

S/844/62/000/000/071/129
D204/D307

tose, while starch forms a reducing compound, HCHO, and an organic acid but no glucose or maltose. Conductometric titrations of 1% solutions of the irradiated saccharides showed that the amount of NaOH required for neutralization decreased in the order starch > glucose > sucrose > mannite > raffinose. The acidity of any one solution is greater if the corresponding carbohydrate was irradiated in O_2 rather than in N_2. The radiochemical changes in solid carbohydrates were similar to those observed in the corresponding aqueous solutions. There are 5 figures.

ASSOCIATION: Institut tsitologii AN SSSR (Institute of Cytology AS USSR)

Card 2/2

YEVDOKIMOV, V.F.; PODDUBNYY, I.Ya.; KUZIN, I.A.

Apparatus for automatic potentiometric and conductometric titration. Zav.lab. 31 no.10:1274-1275 '65.

(MIRA 19:1)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut sinteticheskogo kauchuka.

YEVDOKIMOV, V.G.

Selecting pressure fluid for hydraulic presses in the manufacture of fiberboard. Der. prom. 13 no.6:24-25 Je '64.
(MIRA 17:6)

PETYGIN, V.I.; TRUBITSYN, A.P.; YEVDOKIMOV, V.G.

Use of a capacity pickup to measure the moisture content of loose materials. TSvet. met. 33 no.7:8-12 Jl '60. (MIRA 13:7)

1. Gintsvetmet.
(Granular materials) (Moisture--Measurement) (Transducers)

NEVEROKMOV, V.G.

Regularities of the granulation process. Tsvet. met. 37 no.10:
74 O '64. (MIRA 18:7)

YEVDOKIMOV, V.G.; PETYGIN, V.I.; PYZHOV, V.S.; prinimali uchastiye: SMIRNOV, V.M.; KISELEV, L.N.; SHUMILOV, A.S.; VUKOKUNOV, V.K.; TIKHONOV, N.A.

Investigating granulators as controlled systems. TSvet. met. 35 no.6: 41-46 Je '62. (MIRA 15:6)
(Ore dressing) (Granular materials)

LEVDOKIMOV, V.I., inzh.; KURSHIN, I.K., ninzh.; NEBOV, Yu.N., inzh.

Semitrailer with controllable wheels for transporting long structural elements. Strol. i dor. mash. 7 no.7:21-22 Jl '62. (MIRA 15:7)
(Truck trailers) (Precast concrete—Transportation)

YEVDOKIMOV, I.G.; KALABIN, M.M.; KAPATSKIY, N.A., kand. fiz.-matem.nauk, otv. red.; LEBEDEVA, I.A., red.

[Physica; textbook for students entering the Leningrad Institute of Construction Engineers] Fizika; uchebnoe posobie dlia postupaiushchikh v LISI; Leningrad, Inzhenerno-stroite. in-t, 1963. 154 p. (MIRA 17:4)

YEVDOKIMOV, V.G., inzh.; PETYGIN, V.I., inzh.

Moisture meter for continuous moisture measurement in flows of loose materials. Pritorostroenie no.1:19-20 Ja '63.
(MIRA 16:2)
(Moisture—Measurement)

YEVDOKIMOV, V.G.; ROZENBERG, L.I.; SKIRKO, S.F.; MATTER, I.M., dotz., red.

[Physics textbook; collection of problems with solutions] Uchebnoe posobie po fizike; sbornik zadach s resheniiami. Leningrad, Leningr. elektrotekhn. in-t svi[illegible], 1964. 173 p. (MIRA 18:7)

YEVDOKIMOV, V.G.

Ways for further automation of the production of fiberboard.
Der. prom. 14 no.7:13-14 Jl '65. (MIRA 19:1)

YEVDOKIMOV, V.I.

KUZNETSOV, A.K.; SHIFMAN, M.Ye.; KONONOVICH, I.G.; YEVDOKIMOV, V.I.

Brief reports. Zav.lab. 23 no.7:878-879 '57. (MLRA 10:8)

1.Kiyevskiy mekhanicheskiy zavod for Shifman, Kononovich)
2.Institut obshchey i neorganicheskoy khimii Akademii nauk SSSR (for Yevdokimov)
(Laboratories--Apparatus and supplies)

YEVDOKIMOV, V. I.

78-3-5-30/39

AUTHOR: Yevdokimov, V. I.

TITLE: The Reaction of Germanium-Tetrachloride With Calcium Oxide (Vzaimodeystviye chetyrekhkhloristogo germaniya s okis'yu kal'tsiya)

PERIODICAL: Zhurnal Neorganicheskoy Khimii, 1958, Vol 3, Nr 5, pp 1232-1236 (USSR)

ABSTRACT: Investigations on the reaction between germanium-IV-tetrachloride with calcium oxide were carried out. The beginning of the temperature of reaction between $GeCl_4$ and CaO could be determined in a special device, which makes possible the investigation of the heterogeneous reaction between vapor-phase and solid phase. Three exothermic effects were determined at 395, 595 and 650°C from the curve of temperature-reaction.
It was found that the action of $GeCl_4$ on CaO takes place gradually. At 335°C the reaction begins by an intense adsorption of $GeCl_4$; at 600°C the composition of the sums of the formed bodies corresponds to 3 mol CaO and 1 mol $GeCl_4$. A complete decomposition of the reaction-products takes place at 1200°C.

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The Reaction of Germanium-Tetrachloride With Calcium Oxide 78-3 5-30/39

The X-ray analyses of the formed products of reaction show that the compounds have different crystalline structures.
The chemical interaction between $GeCl_4$ and CaO presumably takes place according to the following equations:

$$GeCl_4 + 4\ CaO \longrightarrow Ca_2GeO_4 + 2\ CaCl_2$$

$$3\ Ca_2GeO_4 + GeCl_4 \longrightarrow 4\ CaGeO_3 + 2\ CaCl_2$$

$$5\ CaGeO_3 + GeCl_4 \rightleftharpoons 3\ CaGe_2O_5 + 2\ CaCl_2$$

There are 5 figures, 2 tables, and 4 references, none of which are Soviet.

SUBMITTED: June 4, 1957

AVAILABLE: Library of Congress

1. Germanium-tetrachloride--Chemical reactions 2. Calcium oxide--Chemical reactions

Card 2/2

5 (0)
AUTHOR: Yevdokimov, V. I. SOV/62-59-8-40/42

TITLE: Annual Plenary Session of the Section of Chemical Sciences of the Academy of Sciences, USSR on March 25, 1959

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1959, Nr 8, pp 1508 - 1511 (USSR)

ABSTRACT: The annual plenary session was held at the Institut organicheskoy khimii Akademii nauk SSSR (Institute of Organic Chemistry of the Academy of Sciences, USSR). The Secretary of the Section, Academician N. N. Semenov, read a paper on the reorganization of work in the institutes according to the decisions of the 21st Party Meeting and the May Plenary Session of the TsK KPSS (Establishment of close contacts with industry, new economical production processes, intensification of research). More details concerning the individual items follow. There was an extended discussion on the problems spotlighted in the paper. Discussants were Academicians A. Ye. Arbuzov, B. A. Arbuzov, A. P. Vinogradov, S. I. Vol'fkovich, V. A. Kargin, V. N. Kondrat'yev, S. S. Medvedev, P. A. Rebinder, I. V. Tananayev, A. N. Frumkin, and Academician of the Latvian SSR, A. I. Kalnins, as well as the Corresponding

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Members of the AS USSR S. N. Danilov, S. Z. Roginskiy, the Doctors of Science V. I. Ivanov, A. V. Kiselev, A. B. Taubman, A. P. Trapeznikov, and others. Academician V. I. Spitsyn criticized the activity of the Bureau of the Section and announced an intensification of physico-chemical research in the field of polymers. In future, the Institute would, he indicated, carry out up-to-date research work only. The article goes on to mention the contributions of the other participants in the discussion. The following persons were elected directors of the newly established institutes: B. A. Arbuzov, Director of the Institut organicheskoy khimii, Kazan' (Institute of Organic Chemistry at Kazan'), Academician A. P. Topchiyev, Director of the Institut neftekhimicheskogo sinteza (Institute of Petroleum Chemical Synthesis), and Academician A. N. Frumkin, Director of the Institut elektrokhimii (Institute of Electrochemistry).

5.2200

78089
SOV/62-60-1-35/37

AUTHORS: Yevdokimov, V. I., Morozov, I. S.

TITLE: Letter to the Editor. Synthesis of Stannous Chloride From Elements

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1960, Nr 1, p 147 (USSR)

ABSTRACT: The authors report that stannous chloride was obtained for the first time by direct synthesis from the elements. A good contact between the gaseous chlorine and the reacting surface of tin is important. Two different methods were used: (1) The process was conducted at a temperature higher than the bp of $SnCl_2$ (606°), thus removing SnCl formed by evaporation. (2) The process was conducted at a temperature slightly higher than mp of tin (235-300°) thus by constant renovation of the reacting tin surface. The proposed methods are of industrial importance. They can be used for

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Letter to the Editor. Synthesis of Stannous Chloride From Elements

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SOV/62-60-1-35/37

the preparation of other products. Anhydrous titanium trichloride was obtained from tetrachloride by the proposed methods.

ASSOCIATION: N. S. Kurnakov Institute of General and Inorganic Chemistry Academy of Sciences USSR (Institut obschey i neorganicheskoy khimii imeni N. S. Kurnakova Akademii nauk SSSR)

SUBMITTED: October 20, 1959

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S/078/60/005/012/011/016
B017/B064

AUTHORS: Yevdokimov, V. I. and Sokolova, I. G.

TITLE: X-Ray Pictures of Reaction Products of Germanium Tetrachloride With Calcium Oxide

PERIODICAL: Zhurnal neorganicheskoy khimii, 1960, Vol. 5, No. 12, pp. 2798-2801

TEXT: The reaction products of germanium tetrachloride with calcium oxide form according to the following equations:

$4CaO + GeCl_4 = Ca_2GeO_4 + 2CaCl_2$ (1)

$3CaO + GeCl_4 = CaGeO_3 + 2CaCl_2$ (2)

$5CaO + 2GeCl_4 = CaGe_2O_5 + 4CaCl_2$ (3)

The reaction product forming at 420°C was rehydratized, and X-ray pictures were taken of the resulting calcium germanate hydrate ($Ca_2GeO_4 \cdot H_2O$). Table 4 gives the Debye diagram, and compares it with that of the hillebrandite

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mineral ($CaSiO_4 \cdot H_2O$). A comparison of the two Debye diagrams reveals that calcium orthogermanate and calcium orthosilicate show similar X-ray pictures. Tables 6 and 8 show the X-ray pictures of the reaction products $CaGeO_3$ and $CaGe_2O_5$ forming at 600° and 650°C, respectively. The X-ray pictures are compared with those of wollastonite. The X-ray picture of the product $5CaO \cdot 2GeCl_4$ is similar to that of barium disilicate. Table 9 shows the Debye diagram of the hydration product of $CaGe_2O_5$. The structure of the ortho-, meta-, and calcium digermanates is similar to the structure of the ortho-, meta-, and calcium disilicates. V. F. Zhuravlev is mentioned. There are 9 tables and 5 references: 2 Soviet, 2 US, and 1 German.

SUBMITTED: September 30, 1959

S/030/61/000/002/002/011
B105/B206

AUTHORS: Yevdokimov, V.I., Candidate of Chemical Sciences
Morozov, I.S., Candidate of Chemical Sciences

TITLE: Application of chlorine in tin metallurgy (Physicochemical fundamentals of chloridizing at low temperatures)

PERIODICAL: Vestnik Akademii nauk SSSR, no. 2, 1961, 44 - 47

TEXT: Chloridizing of tin at low temperatures, for the economic exploitation of tin ores and concentrates with a tin content below 10%, was investigated by the authors. At present, such ores are not processed at all or only with great losses of tin (up to 50%). A further progress in the tin industry can only be made by applying completely new processes based on new chemical reactions. A sufficiently high yield of tin from concentrates containing less than 10% tin, as well as the separation of tin from all residual components must be warranted. The chloridizing of the powdery charge at low temperatures (120 to 180°C) takes place with the formation of stannic chloride: $Sn + 2Cl_2 = SnCl_4$. The most important investigation

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results, on the basis of which the chloridizing method at low temperatures was elaborated, are checked next. Under usual conditions, the first stage of the reaction, the formation of $SnCl_2$, cannot be observed, since it is very easily oxidized to $SnCl_4$ by chlorine. Oxidation already takes place at a pressure of the chlorine above the $SnCl_2$ of 10^{-14}mm Hg. The authors also investigated the kinetics of the process in the kinetic as well as diffusion range. At an increase of the linear chlorine rate from 20 to 70 cm/min, the rate of chloridizing increases from 2 to 6 g tin per hour per 1 cm^2 of the reaction area. An increase of the linear chlorine rate above 70 cm/min does not affect the rate of chloridizing, but the percentage of the utilization of chlorine is reduced (Fig. 1). The chloridizing rate as a function of the temperature is shown in Fig. 2. The equation $SnCl_4 + Sn = 2SnCl_2$ shows the mechanism and kinetics of the interaction of stannic chloride with metallic tin. It was established that this reaction does not start at 600°C as previously assumed, but at 230°C. This fact as well as

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the determination of the reaction rate at various temperatures and pressures of the $SnCl_4$ vapor made it possible to elaborate the method of direct $SnCl_2$ synthesis from chlorine and tin, as well as the method of chlorine-refining of the tin from lead. The losses of tin were considerably reduced and the refining process was intensified. At present, there exist two variants for the production of anhydrous $SnCl_2$: at a temperature above 606°C and at one slightly higher than the fusing temperature of tin. On the basis of this method, anhydrous $SnCl_2$ can be produced in great quantities and without losses. The new method for tin production from concentrates with low tin content consists of the following: the charge of concentrate with low tin content, and coal is heated to 820 - 860°C in a reducing atmosphere. The tin is thereby reduced to metal and remains in the charge in the shape of smallest metal reguli. The reduced charge is cooled and chloridized by means of chlorine gas at 120 to 180°C. Pure metallic tin is produced therefrom. The raw material deposits worth mining increase by more than the double by using this method, and the tin yield increases by 15 to 20%. The processes recommended may easily be automated.

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Since chloridizing proceeds at low temperature, the apparatus can be built from steel. Collaborators of the Institut obshchey i neorganicheskoy khimii Akademii nauk SSSR (Institute of General and Inorganic Chemistry of the Academy of Sciences USSR), TsNIIOLOVO ((Tsentral'nyy nauchno-issledovatel'skiy institut olova)(Central Scientific Tin Research Institute)) and Novosibirskiy olovozavod (Novosibirsk Tin Plant) conducted experiments in enlarged installations. It is assumed that the introduction of this method will permit to increase the amount of tin produced and reduce the production costs considerably. There are 2 figures and 3 Soviet-bloc references.

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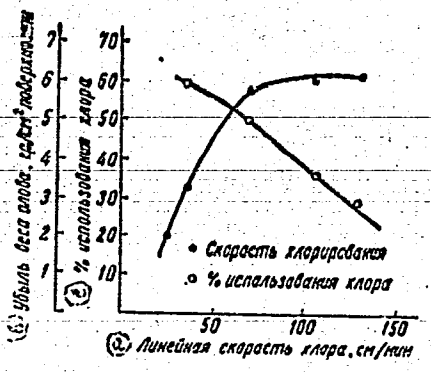
S/030/61/000/002/002/011
B105/B206



Legend to Fig.1: • rate of chloridizing, o and c) percentage of chlorine utilization; a) linear chlorine rate in cm/min; b) reduction of the tin weight in g/cm^2 of the area.

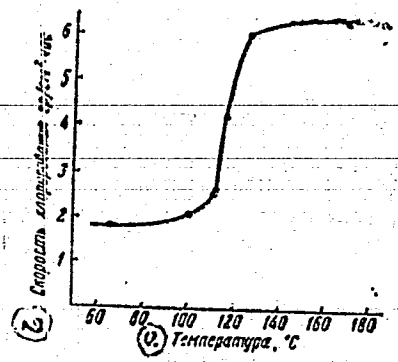


Fig.2: a) temperature in °C; b) rate of chloridizing in g/cm^2 hr.

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KRIPYAKEVICH, P.I.; YEVDOKIMENKO, V.I.

Crystalline structures of the compounds Ba_2Mg_{17} and Sr_2Mg_{17}.
Kristallografiia 7 no.1:31-42 Ja-F '62. (MIRA 15:2)

1. L'vovskiy gosudarstvennyy universitet im. I. Franko.
(Magnesium alloys)
(Crystallography)

S/025/62/000/010/001/002
D204/D307

AUTHORS: Semenov, N.N., Nobel prize winner, Academician and Yevdokimov, V.I., Candidate of Chemical Sciences

TITLE: Forever young

PERIODICAL: Nauka i zhizn', no. 10, 1962, 10-18

TEXT: A few isolated aspects of modern inorganic chemistry are discussed, which are at present in an early stage of development. The following subjects are treated: 1) Inorganic polymers, particularly linear structures bonded in all 3 directions (but not through every unit) to form a loose network, are thought promising. 2) Semiconductors, where an effort should be made to study the electrophysical characteristics of a wide range of materials; an important characteristic is the long life of current carriers, which is in turn determined by purity, perfection of lattice and surface properties. Synthesis of new semiconductors is urged, based e.g. on sulphides and tellurides. 3) Ultra-purification of known materials, leading to development of new properties and extended fields of

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D204/D307

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application. Research is recommended into the related subject of trace analysis. 4) Behavior of materials at high pressures and low and high temperatures (3000 - 5000°C), the latter being important in e.g. the study of plasma. 5) Silicates and related materials. Particularly stressed are ordinary and crystalline glasses, zeolites (possibly to be applied as molecular sieves), protection of constructional materials at high temperatures, refractories, cements and concretes. 6) Extractive metallurgy involving the use of chlorine, especially promising for the rare-earth and other non-ferrous metals. Advantages of this method are listed, underlining the need for additional studies. The extraction of tin by chlorination is used as an example. Other new directions in this field, such as electrothermal methods, electron-beam fusion, high temperature decomposition and continuous reduction methods are mentioned. There are 15 figures.

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YEVDOKIMOV, V.I., kand.khim.nauk

Annual meeting of the Chemical Society of the German Democratic Republic. Vest. AN SSSR 32 no.3:78 Mr '62. (MIRA 15:2)
(Chemistry--Congr)

SEMENOV, N.N., laureat Nobelevskoy premii, akademik;
YEVDOKIMOV, V.I., kand.khimicheskikh nauk

Eternally young. Nauka i zhizn' 29 no.10:10-18 O '62.
(MIRA 15:12)

(Chemistry, Inorganic—Research)

GOGOLITSYN, M.A., kand.tekhn.nauk; YEVDOKIMOV, V.I., inzh.; MOSHENSKIY, Yu.A., inzh.; PAVLICHKOV, N.I., inzh.

Restoration of crankshafts by build-up welding. Svar. proizv. no. 10:22-25 O '63. (MIRA 16:11)

1. Kazanskiy nauchno-issledovatel'skiy i proyektnyy institut avtomobil'nogo transporta.

ACC NR: AP7001378 (A,N) SOURCE CODE: UR/0413/66/000/021/0052/0052

INVENTORS: Yevdokimov, V. I.; Poliyevskiy, G. A.

ORG: none

TITLE: Method for synchronizing self-excited generators of periodic or random sequences of pulses with determined cycle interval. Class 21, No. 187830

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 21, 1966, 52

TOPIC TAGS: pulse generator, pulse sequence, pulse amplitude

ABSTRACT: This Author Certificate presents a method for synchronizing self-excited generators of periodic or random sequences of pulses with determined cycle interval. To insure stable operation of the self-excited generator over a wide range of pulse and interval density variation, input pulses with constant amplitude are supplied to a converter of interval length between pulses to pulse amplitude directly proportional to the length of the preceding interval. The converted pulses are then supplied through a synchronization circuit to the self-excited generator.

SUB CODE: 09/ SUBM DATE: 03Jul65

Card 1/1 UDC: 621.394.145

MOISEYENKO, A.T., inzh.; MOSKALEV, N.M., kand. tekhn. nauk; KOSHKIN, V.G., kand. tekhn. nauk; MKERVALI, O.P., inzh., red.; D'YACHKOV, G.D., inzh., red.; YEVDOKIMOV, V.M., inzh., red.; STRASHNYKH, V.P., red. izd-va; MOLCHALINA, Z.S., tekhn. red.; BOROVNEV, N.K., tekhn. red.

[Construction specifications and regulations] Stroitel'nye normy i pravila. Moskva, Gosstroiizdat. Pt.1. Sec.B. ch.3. [Fundations and supports of piles and cylindrical shels; precast construction (SNiP I-B.3-62)] Fundamenty i opory iz svai i tsilindricheskikh obolochek; sbornye konstruktsii SNiP I-B.3-62). 1963. 7 p. Pt.1. Sec.V. ch.15.[Polymer-base materials and products (SNiP I-V.15-62)] Materialy i izdeliia na osnove polimerov (SNiP I-V.15-62). 1963. 26 p. (MIRA 16:6)

1. Russia (1923- U.S.S.R.) Gosudarstvennyy komitet po delam stroitel'stva. 2. Gosstroy SSSR (for Mkervali, Moiseyenko). 3. Mezhduvedomstvennaya komissiya po peresmotru stroitel'nykh norm i pravil (for D'yachkov, Moskalev). 4. Gosudarstvennyy institut po proyektirovaniyu osnovaniy i fundamentov "Fundamentproyekt" Ministerstva stroitel'stva RSFSR (for Yevdokimov). 5. Vsesoyuznyy nauchno-issledovatel'skiy institut novykh stroitel'nykh materialov Akademii stroitel'stva i arkhitektury SSSR (for Koshkin).

(Concrete piling) (Polymers)

ACCESSION NR: AP4009460 S/0051/63/015/006/0772/0780

AUTHOR: Vasil'yev, A.M.; Yevdokimov, V.M.

TITLE: Influence of an electric field on NMR in gases and liquids

SOURCE: Optika i spektroskopiya, v.15, no.6, 1963, 772-780

TOPIC TAGS: NMR, NMR splitting, chemical shift, nonspherical nucleus, quadrupole moment, quadrupole coupling constant, symmetrical top molecule, linear molecule

ABSTRACT: The influence of an external electric field on the splitting of the nuclear magnetic resonance spectrum of nuclei with a quadrupole moment has been considered by one of the authors in an earlier paper (A.M.Vasil'yev, ZhETF,43,1526,1962). In the present paper, the problem is treated quantum-mechanically taking into account the orientation of the molecules in the applied electric field. It is assumed that the nuclei have a non-zero quadrupole moment and are bound in a molecule with an electric dipole moment. The initial equation is the quadrupole interaction Hamiltonian of Landau and Lifshits (Kvantovaya mekhanika [Quantum mechanics],M.-L. 1948). The wave functions are derived for an axially symmetric top molecule. In addition, the case of a linear molecule is considered. The final equations charac-

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ACC.NR: AP4009460

terize the spectrum of resonance frequencies that should appear in lieu of the single NMR line. The possibility of measuring the splitting experimentally for the purpose of evaluating the quadrupole coupling constant is discussed. It is concluded that measurement of the line broadening should be feasible under the appropriate experimental conditins. Orig.art.has: 65 formulas.

ASSOCIATION: none

SUBMITTED: 04Mar63	DATE ACQ: 02Jan64	ENCL: 00
SUB CODE: PH	NR REF SOV: 004	OTHER: 004

Card 2/2

SVIRIDOV, S.A.; PEREL'MAN, V.M.; YEVDOKIMOVA, V.M. (Moskva)

Diagnosis of interstitial calcinosis. Klin. med. 41 no.4 110-114 Ap '63. (MIRA 17:2)

1. Iz 1-y kafedry rentgenologii i radiologii TSentral'nogo instituta usovershenstvovaniya vrachey (zav. - zasluzhennyy deyatel' nauki prof. S.A. Reynberg) na baze bol'nitsy imeni S.P. Botkina.

BOCHAROV, V.N.; DUDAYEVA, L.M.; YEVDOKIMOV, V.M.; KOLOSOV, A.F.; KRASOVSKIY, V.P.; LUK'YANOV, E.B.; MUSATOVA, V.A.; NOVIKOV, M.S.; SUKHOVANCHENKO, G.P.; TABELEV, V.V.; TOLKACHEV, A.S.; CHERTKO, V.F.[deceased]; SHTANSKIY, V.A.; PAK, G.V., red.; SELESNEVA, A.D., mlad. red.

[Structure of capital investments in the U.S.S.R. and the U.S.A.; analysis and methods of comparison] Struktura kapital'nykh vlozhenii SSSR i SShA; analiz i metody sopostavleniia. Moskva, Ekonomika, 1965. 250 p. (MIRA 18:5)

1. Moscow. Nauchno-issledovatel'skiy ekonomicheskiy institut.